

IN THE CLAIMS:

1. - 16. (canceled)

17. (previously presented) A near-field optical probe comprising: a cantilever having a first main surface, a second main surface opposite the first main surface, a fixed end, a free end opposite to the fixed end, and a convex portion disposed on the second main surface, the cantilever being disposed at an inclination angle θ_1 relative to a surface of a sample; a base supporting the cantilever at the first main surface; a tip having a height H and extending from the second main surface of the cantilever and having a microscopic aperture at an end thereof, the convex portion of the cantilever being disposed at a position closer to the fixed end of the cantilever than to the tip, and a height of the tip being greater than a height of the convex portion; and a shade film formed on the second main surface of the cantilever and on a surface of the tip except for the microscopic aperture; wherein when a radius of a light spot on the cantilever resulting from light incident on the tip or light detected by the microscopic aperture and being incident on a detector is R_1 , a distance L_1 from a center of the tip to a free end of the cantilever satisfies the equation $R_1 < L_1 < H/\tan \theta_1$.

18. (canceled)

19. (currently amended) A near-field optical apparatus comprising:

~~a near field optical probe according to claim 1;~~

a cantilever formed of a transparent material and having a first main surface and a second main surface opposite the first main surface;

a base supporting the cantilever at the first main surface;

a tip extending from the second main surface of the cantilever and having a microscopic aperture at an end thereof, the tip being formed of a transparent material having a higher refractive index than that of the transparent material of the cantilever to increase an amount of near-field light generated or detected by the microscopic aperture;

a shade film formed on the second main surface of the cantilever and on a surface of the tip except for the microscopic aperture;

an introducing/detecting optical system having a lens for introducing light to the microscopic aperture of the near-field optical probe or detecting light from the microscopic aperture of the near-field optical probe;

a detector for detecting a distance between the microscopic aperture of the near-field optical probe and a sample by an optical lever method, the detector having a

mirror integral with the lens of the introducing/detecting optical system; and

a fine movement mechanism for finely moving the sample or the near-field optical probe.

20. - 22. (canceled)

23. (currently amended) A near-field optical apparatus comprising:

~~a near field optical probe according to claim 1;~~
a cantilever formed of a transparent material and having a first main surface and a second main surface opposite the first main surface;

a base supporting the cantilever at the first main surface;

a tip extending from the second main surface of the cantilever and having a microscopic aperture at an end thereof, the tip being formed of a transparent material having a higher refractive index than that of the transparent material of the cantilever to increase an amount of near-field light generated or detected by the microscopic aperture;

a shade film formed on the second main surface of the cantilever and on a surface of the tip except for the microscopic aperture;

an introducing/detecting optical system for introducing light to the microscopic aperture of the near-field optical probe or detecting light from the microscopic aperture of the near-field optical probe;

a detector for detecting a distance between the microscopic aperture of the near-field optical probe and a sample and for detecting an interference between the cantilever of the near-field optical probe and an optical fiber disposed close to the cantilever; and

a fine movement mechanism for finely moving the sample or the near-field optical probe.

24. - 28. (canceled)

29. (previously presented) A method for manufacturing a near-field optical probe, comprising the steps of: forming a step portion on a substrate; providing a transparent member on a first main surface of the substrate; etching a part of the transparent member to form a tip in the vicinity of the step portion; forming a mask on the transparent member covering the tip and etching the transparent member using the mask to form a lever; etching the substrate from a second main surface opposite to the first main surface to form a base; and forming a shade film on the lever and on the tip except for an end portion of the tip.

30. (previously presented) A method for manufacturing a near-field optical probe, comprising the steps of: forming a step portion on a substrate; burying a weight material to be used as a weight portion in the step portion; providing a transparent member on a first main surface of the substrate; etching a part of the transparent member to form a tip; forming a mask on the transparent member covering the tip and etching the transparent member using the mask to form a lever; etching the substrate from a second main surface opposite to the first main surface to form a base; and forming a shade film on the lever and on the tip except for an end portion of the tip.

31. (previously presented) A method according to claim 30; wherein the burying step comprises providing the weight material on the substrate to at least fill the step portion with the weight material, and removing part of the weight material so that a surface of the weight material provided in the step portion and a surface of the substrate are disposed in a single plane.

32. (previously presented) A method for according to claim 31; wherein the step of removing the weight material comprises polishing the weight material.

33. - 38. (canceled)

39. (previously presented) A near-field optical apparatus according to claim 19; wherein the tip of the near-field optical probe is generally conical-shaped.

40. (previously presented) A near-field optical apparatus according to claim 19; wherein the tip of the near-field optical probe is generally pyramidal-shaped.

41. - 42. (canceled)

43. (previously presented) A near-field optical apparatus according to claim 23; wherein the tip of the near-field optical probe is generally conical-shaped.

44. (previously presented) A near-field optical apparatus according to claim 23; wherein the tip of the near-field optical probe is generally pyramidal-shaped.

45. - 48. (canceled)

ADDITIONAL FEES:

No additional fees are believed required in connection with this second amendment after final; however, should it be determined that a fee is due, authorization is hereby given to charge any such fee to our Deposit Account No. 01-0268.